MASS-ANALYZED THRESHOLD IONIZATION SPECTROSCOPY OF P-CHLOROANISOLE

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We applied the two-color resonant two-photon photoionization efficiency and mass-analyzed threshold ionization (MATI) spectroscopic techniques to record the cation spectra of p-chloroanisole. In particular, several vibronic states were used as the intermediate levels to record the MATI spectra to investigate whether a significant change in molecular geometry upon ionization and to obtain more information about the active cation vibrations. The adiabatic ionization energy of this molecule has been precisely measured to be 66 100 $\pm$ 5 cm-1. These experimental data suggest that the molecular geometry of p-chloroanisole in the cationic ground D0 state resembles that in the electronically excited neutral S1 state. Most of the observed distinct MATI bands result from the active vibrations involving in-plane ring deformation of the p-chloroanisole cation.